

**Before the
Federal Communications Commission
Washington, DC 20554**

In the Matter of:)	
)	
Biennial Regulatory Review – Amendment of)	
Parts 1, 22, 24, 27 and 90 to Streamline and)	WT Docket No. 03-264
Harmonize Various Rules Affecting Wireless)	
Radio Services)	

To: The Commission

**REPLY COMMENTS OF
CROWN CASTLE INTERNATIONAL CORP.**

Crown Castle International Corp. (“CCI”) hereby submits these reply comments in the above-referenced proceeding, in which the Commission’s *Further Notice* sought comment, *inter alia*, on CCI’s proposal to establish an alternative power spectral density (“PSD”) limit for the 1670-1675 MHz band,^{[1/](#)} building on a related proposal by CTIA to adopt an alternative PSD limit for the PCS and AWS bands. ^{[2/](#)} Specifically, CCI has proposed an alternative PSD limit of 4000 Watts/MHz EIRP in non-rural areas, and 8000 Watts/MHz EIRP in rural areas – levels that represent significantly *less* power per megahertz of spectrum than the levels possible under the existing rule for many common air interface technologies, including GSM, TDMA, AMPS and

^{[1/](#)} *Biennial Regulatory Review – Amendment of Parts 1, 22, 24, 27 and 90 to Streamline and Harmonize Various Rules Affecting Wireless Radio Services*, Report and Order and Further Notice of Proposed Rulemaking, 20 FCC Rcd 13,900 (2005) (“*Further Notice*”), at ¶ 54 (seeking comment on CCI’s proposal originally presented in its May 16, 2005 *ex parte* submitted in this proceeding).

^{[2/](#)} CTIA’s proposal requests that PCS and AWS licensees be provided the option of complying with PSD limits of 3280 Watts/MHz EIRP in non-rural areas and 6560 Watts/MHz EIRP in rural areas. *Further Notice* at ¶ 51. The fact that CTIA does not propose these power levels for non-AWS Part 27 services (CTIA Comments at 5) is consistent with CCI’s proposal for the 1670-1675 MHz band, where CCI agrees that power levels different than those for the PCS and AWS bands are required. For example, the current per-carrier limit for the PCS band is 1640 Watts EIRP, but is 2000 Watts for the 1670-1675 MHz band. Accordingly, the PSD limits proposed by CCI for the 1670-1675 MHz band are proportionately higher.

iDen. CCI's proposal would lessen the considerable power advantage enjoyed by narrowband technologies vis-à-vis newer, wideband technologies, and would enable CCI to deploy its nationwide, mobile video service more rapidly and efficiently, with significantly fewer transmitter sites. ^{3/}

Comments Support CCI's Proposal

In addition to CCI, eight other parties filed comments in response to the *Further Notice*. CCI's proposal garnered explicit support from Motorola, ^{4/} and Powerwave Technologies similarly urged the Commission to adopt PSD limits for Part 27 services, in addition to services covered by the CTIA proposal. ^{5/} As Powerwave correctly noted, the current per-carrier power levels are outdated, as they "were set years ago when mobile video and high speed data were not yet on anyone's 'drawing board'." ^{6/} Notably, no commenter opposed CCI's proposal – not surprising, given that the requested PSD limits will result in no greater threat of harmful interference to other spectrum users. Moreover, most commenters strongly supported the general concept of providing a PSD limit as an alternative to current per-carrier limits, as a means of achieving technology neutrality. ^{7/}

^{3/} As explained in its comments, CCI is deploying wideband DVB-H technology, utilizing a 5 MHz bandwidth.

^{4/} Motorola Comments at 5.

^{5/} Powerwave Technologies Comments at 2, 3.

^{6/} *Id.* at 6.

^{7/} See Qualcomm Comments at 2; Powerwave Technologies Comments at 1; CTIA Comments at 5-6; Ericsson Comments at 4. The Wireless Communications Association ("WCA") and the National Safety Telecommunications Council opposed any changes to the rules for certain services in the 2 GHz and 800 MHz bands, respectively, as restructurings or other changes involving these bands have already been initiated as a result of rulemaking proceedings. However, these commenters did not oppose the use of PSD limits for other bands.

CCI Supports Use of Average Power Limits Without Any Peak-to-Average Ratio

All commenters addressing the issue supported CTIA’s proposal that the radiated power rules be specified in terms of average – rather than peak – power, consistent with current, Commission-sanctioned industry practice. ^{8/} Commenters also uniformly disapproved of the imposition of a peak-to-average ratio (“PAR”), as raised in the *Further Notice*. ^{9/} As Ericsson notes, operators already have a market incentive to minimize PAR, as lower PAR “helps decrease the cost of equipment, assure a higher quality signal, and increase efficiency.” ^{10/} CCI concurs with these comments and urges the Commission to specify the power limits for the 1670-1675 MHz band as an average limit, without any PAR. If the Commission were to impose a peak power or peak-to-average requirement, rather than a simple average power limit, it would again be disadvantaging newer wideband technologies, like DVB-H and UMTS, that employ non-constant envelope emissions and which are not accurately measured using peak measurement techniques. ^{11/} Thus, in order to ensure technology neutrality, the Commission should explicitly provide for average measurements in its rules – including the rules for the 1670-1675 MHz band.

Commenters Unanimously Favor a Sliding Scale Approach

The *Further Notice* sought comment on whether the Commission should express any new power limits on a per-megahertz, sliding scale basis as requested by CTIA and CCI, or on

^{8/} See Ericsson Comments at 18 (discussing FCC staff advice that average detection is permitted as an alternative to peak measurements); Motorola Comments at 4 (change to average power “will bring the rules in-line with industry practice”).

^{9/} *Further Notice* at ¶ 70.

^{10/} Ericsson Comments at 15. See also CTIA Comments at 10.

^{11/} See Qualcomm Comments at 10 (“The known wideband waveforms designed for high data rate transmissions are tightly band limited, and, thus, cannot have a constant envelope.”); CTIA Comments at 10 (an average limit “will both control interference and permit the efficient adoption of new technologies”); Ericsson Comments at 16 (peak measurement “would severely disadvantage” wideband technologies).

a stepped basis, with set limits established for a few emission bandwidth categories. ^{12/} All commenters addressing this issue strongly urged the Commission to adopt a sliding scale approach. They explained that a stepped approach would be arbitrary, ^{13/} would discourage innovation and handicap future technologies, ^{14/} and would result in less efficient networks. ^{15/} Moreover, in response to the *Further Notice*'s concern that a sliding scale approach could prove too complex, WCA notes that the current BRS/EBS rules already employ a type of sliding scale limit "which have not proven to be complex or difficult to apply." ^{16/} The Commission should adopt the fairest, most flexible approach and establish per-megahertz PSD limits as urged by all the commenters.

Environmental Processing Burdens Would Not Be Affected

CCI agrees with CTIA that the adoption of a PSD limit will not increase a licensee's administrative burden in conducting environmental assessments of transmitter sites. As CTIA notes, the PSD proposals "do not increase total allowed radiated power in a given bandwidth from a specific transmitter site." ^{17/} Moreover, CCI is building a network of sites with antenna elevations greater than 10 meters and antennas with narrow vertical patterns directing most of the energy toward the horizon. Therefore, the field strengths generated by these facilities would be well below the Commissions' exposure limits and no additional environmental assessments would be required by granting CCI's proposal. Finally, a change in the rules would

^{12/} *Further Notice* at ¶ 62.

^{13/} Powerwave Technologies Comments at 6-7 (proposed tables "seem only an artifice constructed for capping power, but the Commission has provided no explanation for doing so").

^{14/} Ericsson Comments at 14; Motorola Comments at 3.

^{15/} CTIA Comments at 8.

^{16/} WCA Comments at n.6.

^{17/} CTIA Comments at 11 (responding to *Further Notice* concerns at ¶ 67).

not hinder the ability of engineers to analyze a site, as this is routinely performed using field strength monitoring equipment that can automatically measure the full spectrum regardless of how the power limits are specified in the Commission's rules. Likewise, field strength predictions would not be hindered either, as there would be a defined power limit per MHz with the PSD approach to be used in the calculation, rather than the current approach that requires the knowledge of the technology and number of carriers employed by the operator multiplied by the power level per carrier.

The CCI Proposal Would Not Result in Any Greater Risk of Harmful Interference

In its initial comments, CCI explained that, under its PSD proposal, adjacent channel users would continue to be protected by adherence to the same out-of-band emission limits, and protection of the three co-channel grandfathered Geostationary Operational Environmental Satellite ("GOES") sites would be ensured through close coordination with NOAA and the development of new coordination zone boundaries, to the extent needed, that take account of the new PSD limits. The comments cited to a preliminary interference analysis report prepared under the auspices of NOAA, which indicated that, even under worst case assumptions, only minor increases to the existing coordination zone sizes would be needed when operating at the PSD limit requested, and only at two of the sites (Greenbelt and Fairbanks). [18/](#) Since the comments were filed, the report prepared for NOAA has been finalized, and confirms the preliminary analysis. A copy of the final report, issued by the Department of Defense's Joint Spectrum Center, is attached ("JSC Report"). The JSC Report makes it clear that, with coordination, CCI will be able to locate transmitters and provide service within the coordination

[18/](#) CCI Comments at 11.

zones.^{19/} Providing service to areas within the coordination zones will require coordination with NOAA and a review of the site-specific parameters for any proposed sites within the coordination zones, and will depend on the site candidate's actual location, power level, antenna model, and height above the ground level, among other factors specific to the proposed site. Exhibits were provided in CCI's Comments (substantively identical to those contained in the JSC Report) depicting the maximum coordination distances or radii from the three GOES facilities, in reference to using the requested PSD limits, which will be used for coordination purposes with NOAA to ensure its facilities are fully protected from harmful interference.

Conclusion

Due to its choice of a new, advanced, wideband technology, CCI is confronted by efficiency-reducing power limits that require it to build significant numbers of additional base stations, without providing any concomitant increase in interference protection. By adopting the requested PSD limits for the 1670-1675 MHz band, and by specifying average, rather than peak, power levels without any peak-to-average ratio requirement, the Commission can better fulfill its goal of ensuring technology neutral rules for this service.

Respectfully Submitted,

/s/ Ari Q. Fitzgerald

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^{19/} See JSC Report at 3-3.